

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) ~~Process~~ A process for extract purification of sugar beet raw juice, comprising:
 - a) ~~preliming of the~~ sugar beet raw juice by adding milk of lime thereto until a concentration of about 0.1 to 0.3 g of CaO/100 ml of raw juice has been attained for at least one of precipitation ~~[[or/]]~~ and coagulation of non-sucrose substances in the form of a coagulate,
 - b) ~~addition of~~ adding at least one copolymer of acrylamide and sodium acrylate having a molar mass of about 5 million to about 22 million as a polyanionic flocculant up to a concentration of 1 to 8 ppm,
 - c) ~~removal of the~~ removing coagulate from the preliming juice using at least one first removal apparatus to obtain a clear preliming juice,
 - d) main liming ~~[[of]]~~ the preliming juice obtained after removal of the coagulate by adding milk of lime until a concentration of about 0.6 g of CaO/100 ml in the clear preliming juice has been attained, and
 - e) ~~performance of~~ performing a first carbonatation by introducing carbon dioxide into the main liming juice ~~[[and]]~~ followed by an optional subsequent performance of a second carbonatation.
2. (Currently Amended) ~~Process~~ The process according to claim 1, wherein 1 to 3 ppm of flocculant are added.
3. (Currently Amended) ~~Process~~ The process according to ~~one of claims 1 and 2~~ claim 1, wherein the first removal apparatus ~~[[used]]~~ is a static or dynamic decanter.
4. (Currently Amended) ~~Process~~ The process according to ~~one of claims 1 and 2~~ claim 1, wherein the first removal apparatus used is a centrifuge.

5. (Currently Amended) ~~Process~~ The process according to claim 4, wherein the centrifuge is a pan centrifuge or decanter centrifuge.
6. (Currently Amended) ~~Process~~ The process according to ~~one of claims 1 to 5~~ claim 1, wherein the removed coagulate is concentrated further using a second removal apparatus by removing a further clear preliming juice.
7. (Currently Amended) ~~Process~~ The process according to claim 6, wherein the second removal apparatus used is at least one ~~or more~~ membrane filter press[[~~(es)~~]].
8. (Currently Amended) ~~Process~~ The process according to claim 6, wherein the second removal apparatus used is one or more of at least one of decanter centrifuge(s), ~~and/or~~ pan separators and[[~~/or~~]] vacuum rotary filters.
9. (Currently Amended) ~~Process~~ The process according to ~~one of claims 1 to 8~~ claim 1, wherein a concentrated coagulate having a dry substance content of 40% to 70% is obtained.
10. (Currently Amended) ~~Process~~ The process according to ~~one of claims 1 to 9~~ claim 6, wherein the clear preliming juices obtained using the first and second removal apparatus are combined and subjected to a main liming.
11. (Currently Amended) ~~Process~~ The process according to claim 10, wherein the main liming juice obtained in the main liming is subjected to a first carbonatation by adding carbon dioxide to obtain a first carbonated juice.
12. (Currently Amended) ~~Process~~ The process according to claim 11, wherein the pH of the main liming juice is lowered stepwise to from 10.6 to 11.4 by adding carbon dioxide.

13. (Currently Amended) ~~Process~~ The process according to claim 11 [[or 12]], wherein the first carbonated juice is filtered by means of a candle filter to obtain a first carbonated juice concentrate and a first clear carbonatation juice.

14. (Currently Amended) ~~Process~~ The process according to claim 13, wherein a portion of the first carbonated juice concentrate is used for preliming [[of]] the beet raw juice.

15. (Currently Amended) ~~Process~~ The process according to claim 13, wherein the first clear carbonatation juice is subjected to a second carbonatation by adding carbon dioxide to obtain a second carbonated juice.

16. (Currently Amended) ~~Process~~ The process according to claim 15, wherein the second carbonated juice is concentrated by removing a second clear carbonatation juice by means of a filter separator to obtain a second carbonated juice concentrate.

17. (Currently Amended) ~~Process~~ The process according to claim [[13 and]] 16, wherein the first and second carbonated juice concentrate are combined and concentrated further by ~~means of~~ a membrane filter press to obtain a carbolime.

18. (Currently Amended) ~~Process~~ A process for reducing [[the]] lime consumption in [[the]] extract purification of sugar beet raw juice, comprising:

- a) preliming ~~of the~~ sugar beet raw juice by adding milk of lime thereto up to about 0.1 to 0.3 g of CaO/100 ml of raw juice for precipitation or coagulation of non-sucrose substances in the form of a coagulate,
- b) ~~addition of~~ adding at least one copolymer of acrylamide and sodium acrylate having a molar mass of about 5 million to about 22 million as a polyanionic flocculant up to a concentration of 1 to 8 ppm,
- c) ~~removal of~~ removing the coagulate from the preliming juice using at least one first removal apparatus to obtain a clear preliming juice,

- d) main liming [[of the]] preliming juice obtained after removal of the coagulate by adding milk of lime up to about 0.6 g of CaO/100 ml to the clear preliming juice, and
- e) ~~performance of performing~~ a first carbonatation by introducing carbon dioxide into the main liming juice and ~~subsequent performance of subsequently performing~~ a second carbonatation without intermediate postliming.

19. (Currently Amended) ~~Process~~ The process according to claim 18, wherein 1 to 3 ppm of flocculant are added and the first removal apparatus [[used]] is a static decanter.

20. (Currently Amended) ~~Process~~ The process according to claim 18, wherein 1 to 8 ppm of flocculant are added and the first removal apparatus [[used]] is a pan centrifuge or decanter centrifuge.

21. (Currently Amended) ~~Process~~ The process according to ~~one of claims 18 to 20~~ claim 18, wherein the coagulate removed is concentrated further using a second removal apparatus by removing a further clear preliming juice.

22. (Currently Amended) ~~Process~~ The process according to claim 21, wherein the second removal apparatus comprises one or more of at least one of decanter centrifuge(s), [[and/or]] pan separators, [[and/or]] vacuum rotary filters [[or/]]and ~~one or more~~ membrane filter press(es).

23. (Currently Amended) ~~Process~~ The process according to ~~one of claims 18 to 22~~ claim 21, wherein [[the]] clear preliming juices obtained using the first and second removal apparatus are combined and subjected to a main liming.

24. (Currently Amended) ~~Process~~ The process according to claim 23, wherein the main liming juice obtained in the main liming is subjected to a first carbonatation by adding carbon dioxide to obtain a first carbonated juice.

25. (Currently Amended) ~~Process~~ The process according to claim 24, wherein the first carbonated juice is filtered by ~~means of~~ a candle filter to obtain a first carbonated juice concentrate and a clear carbonation juice.

26. (Currently Amended) ~~Process~~ The process according to claim 25, wherein the first clear carbonation juice is subjected to a second carbonation by adding carbon dioxide thereto to obtain a second carbonated juice.

27. (Currently Amended) ~~Process~~ A process for producing a nutrient-rich non-sucrose substance concentrate from sugar beet raw juice, comprising:

- a) ~~preliming of the~~ sugar beet raw juice by adding milk of lime up to about 0.1 to 0.3 g of CaO/100 ml of raw juice for precipitation or coagulation of ~~[[the]]~~ non-sucrose substances present in the raw juice in the form of a coagulate,
- b) ~~addition of~~ adding at least one copolymer of acrylamide and sodium acrylate having a molar mass of about 5 million to about 22 million as a polyanionic flocculant in the prelied raw juice up to a concentration of 1 to 8 ppm, and
- c) ~~removal of~~ removing the coagulate from the preliming juice using at least one first removal apparatus.

28. (Currently Amended) ~~Process~~ The process according to claim 27, wherein the non-sucrose substances present in the raw juice are high molecular weight protein substances, polysaccharides and cell wall constituents, and also low molecular weight organic or inorganic acids, amino acids and mineral substances.

29. (Currently Amended) ~~Process~~ The process according to claim 28, wherein the cell wall constituents are selected from the group consisting of pectin substances, lignin, cellulose and hemicellulose.

30. (Currently Amended) ~~Process~~ The process according to claim 28, wherein the polysaccharides are levan and dextran.
31. (Currently Amended) ~~Process~~ The process according to claim 28, wherein the protein substances are selected from the group consisting of proteins, nucleoproteins and betaine.
32. (Currently Amended) ~~Process~~ The process according to ~~one of claims 28 to 31~~ claim 28, wherein 1 to 3 ppm of flocculant are added.
33. (Currently Amended) ~~Process~~ The process according to claim 32, wherein the first removal apparatus ~~[[used]]~~ is a static or dynamic decanter.
34. (Currently Amended) ~~Process~~ The process according to ~~one of claims 27 to 31~~ claim 27, wherein the first removal apparatus ~~[[used]]~~ is a pan centrifuge or a decanter centrifuge.
35. (Currently Amended) ~~Process~~ The process according to ~~one of claims 27 to 34~~ claim 27, wherein the removed coagulate is concentrated further using a second removal apparatus.
36. (Currently Amended) ~~Process~~ The process according to claim 35, wherein the second removal apparatus comprises one or more of at least one of decanter centrifuge(s), ~~[[and/or]]~~ pan separator(s), ~~[[and/or]]~~ vacuum rotary filters and~~[[/or a]]~~ membrane filter press(es).
37. (Currently Amended) ~~Process~~ The process according to ~~one of claims 27 to 36~~ claim 27, wherein a concentrated coagulate with a dry substance content of 40% to 70% is obtained.
38. (Currently Amended) ~~Process~~ The process according to claim 37, wherein the concentrated coagulate is comminuted and dried.

39. (Currently Amended) ~~Non-sucrose~~ A non-sucrose substance concentrate, comprising a dewatered coagulate of non-sucrose substances made from sugar beet raw juice, ~~obtainable~~ obtained using a process according to claim 1 ~~one of claims 1 to 17 or a process according to one of claims 27 to 38~~ by preliming the raw juice with addition of milk of lime and a flocculant for precipitation or coagulation of non-sucrose substances and removal of the separated or coagulated non-sucrose substances from the raw juice.

40. (Currently Amended) ~~Non-sucrose~~ The non-sucrose substance concentrate according to claim 39, wherein the non-sucrose substances are high molecular weight protein substances, polysaccharides and cell wall constituents, and also low molecular weight organic or inorganic acids, amino acids and mineral substances.

41. (Currently Amended) ~~Non-sucrose~~ The non-sucrose substance concentrate according to claim 39 ~~[[or 40]]~~, wherein the concentrate has a high phosphorus content.

42. (Currently Amended) ~~[[Use of]]~~ A method of making a phosphate fertilizer or a soil improver which comprises including therein a non-sucrose substance concentrate according to claim 39 ~~one of claims 39 to 41 as a phosphate fertilizer or soil improver.~~

43. (Currently Amended) ~~[[Use of]]~~ A method of making an animal feed comprising including in said feed a non-sucrose substance concentrate according to claim 39 ~~one of claims 39 to 41 as an animal feed.~~

44. (Currently Amended) ~~[[Use]]~~ The method according to claim 43, wherein the non-sucrose substance concentrate is comminuted, mixed with molasses and dried.

45. (Currently Amended) ~~Apparatus~~ An apparatus for at least one of preliming sugar beet raw juice and~~[[/or]]~~ for obtaining a non-sucrose substance concentrate which consists of a

concentrated coagulate of non-sucrose substances made from sugar beet raw juice, said apparatus comprising

at least one vessel (3) for milk of lime treatment of the raw juice for coagulation of the non-sucrose substances present in the raw juice, said vessel having at least one inlet (5) for the raw juice, at least one inlet (7) for milk of lime and an outlet (9) for discharge of the prelimed raw juice,

at least one first removal apparatus (11) for removing the coagulate slurry obtained in the preliming from the preliming juice, said first removal apparatus having an inlet (13), connected to the outlet (9) of the vessel, for the preliming juice, a first outlet (15) for discharge of the clear preliming juice removed from the coagulate slurry, and a second outlet (17) for discharge of the coagulate slurry, and

at least one second removal apparatus (23) for further concentration of the coagulate slurry, said second removal apparatus having an inlet (25), connected to the second outlet (17) of the first removal apparatus, for the removed coagulate slurry, a first outlet (29) for discharge of the removed clear preliming juice and a second outlet (27) for discharge of the concentrated coagulate slurry,

wherein the preliming juice conducted out of the first outlet (15) of the first removal apparatus is combined with the preliming juice conducted out of the first outlet (29) of the second removal apparatus in a common line (35).

46. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 45, wherein the first removal apparatus is a static or dynamic decanter or a centrifuge.

47. (Currently Amended) ~~Apparatus~~ The apparatus according to claim [[45 or]] 46, wherein the centrifuge is a pan centrifuge or a decanter centrifuge.

48. (Currently Amended) ~~Apparatus~~ The apparatus according to ~~one of claims 45 to 47~~ claim 45, wherein the second removal apparatus comprises one or more membrane filter press(es) or at least one centrifuge or vacuum rotary filter.

49. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 48, wherein the centrifuge is a pan separator or a decanter centrifuge.